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> [Langmuir](#). 2016 Mar 22;32(11):2708-17. doi: 10.1021/acs.langmuir.5b03239. Epub 2016 Mar 7.

Graphene Oxide and Lipid Membranes: Size-Dependent Interactions

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Abstract

We have investigated the interaction of graphene oxide (GO) sheets with supported lipid membranes with focus on how the interaction depends on GO sheet size (three samples in the range of 90–5000 nm) and how it differs between small and large liposomes. The layer-by-layer assembly of these materials into multilamellar structures, as discovered in our previous research, is now further explored. The interaction processes were monitored by two complementary, real time, surface-sensitive analytical techniques: quartz crystal microbalance with dissipation monitoring (QCM-D, electroacoustic sensing) and indirect nanoplasmonic sensing (INPS, optical sensing). The results show that the sizes of each of the two components, graphene oxide and liposomes, are important parameters affecting the resulting multilayer structures. Spontaneous liposome rupture onto graphene oxide is obtained for large lateral dimensions of the graphene oxide sheets.

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